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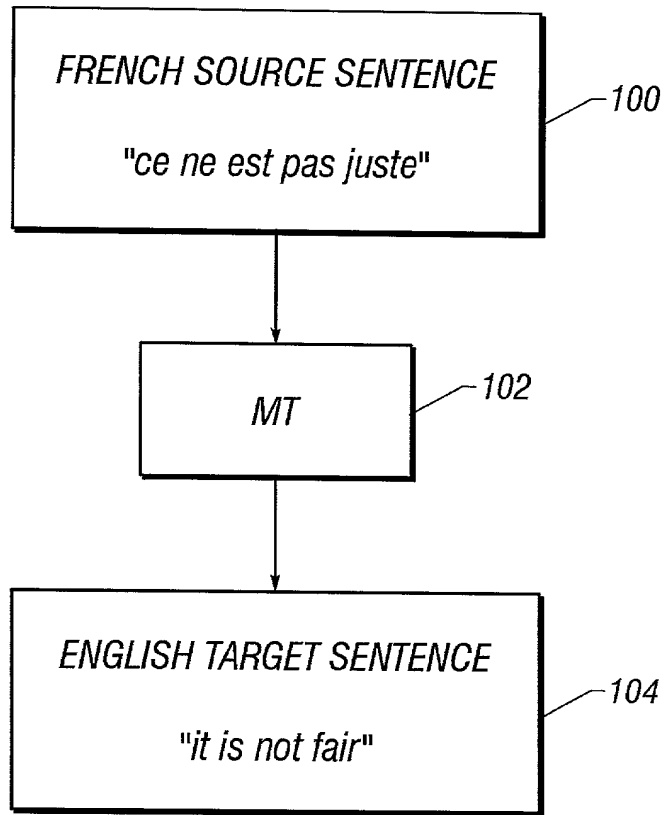


FIG. 1A

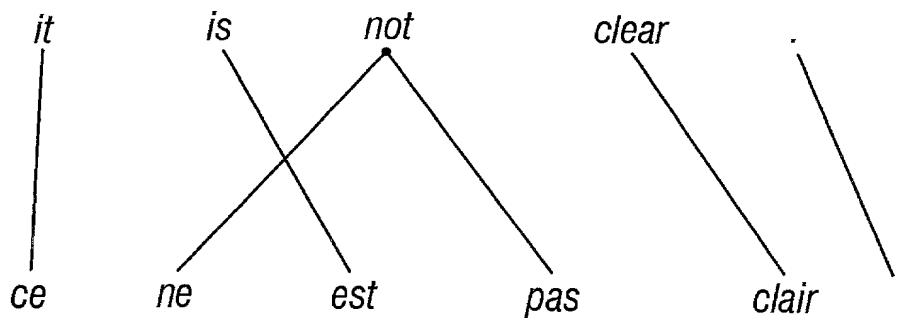


FIG. 1B

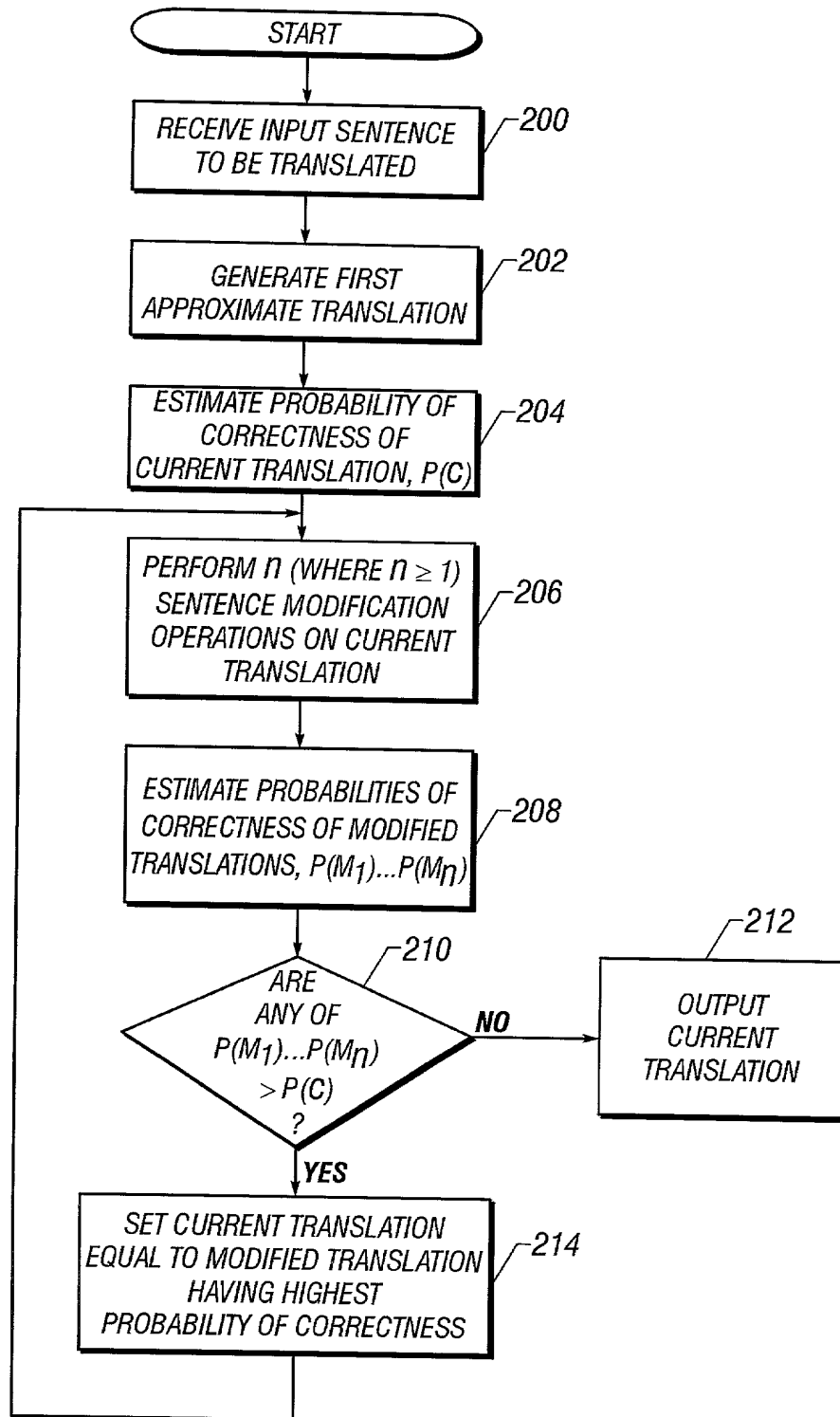


FIG. 2

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ACTION

NULL well heard , it talking a beautiful victory .  
bien entendu , il parle de une belle victoire .

translateTwoWords  
(5, talks, 7, great)

NULL well heard , it talks a great victory .  
bien entendu , il parle de une belle victoire .

translateTwoWords  
(2, understood, 0, about)

NULL well understood , it talks about a great victory .  
bien entendu , il parle de une belle victoire .

translateOneWord  
(4, he)

NULL well understood , he talks about a great victory .  
bien entendu , il parle de une belle victoire .

translateTwoWords  
(1, quite, 2, naturally)

NULL quite naturally , he talks about a great victory .  
bien entendu , il parle de une belle victoire .

FIG. 3

## ITERATION 1

*ce ne est pas juste.*  
*that is not fair.*

$Aprob = 1.13162e-22$      $LMprob = 2.98457e-14$      $TMprob = 3.79156e-09$

## ITERATION 2

*Change not -> ne to is -> ne*

*ce ne est pas juste.*  
*that is is not fair.*

$Aprob = 9.95934e-19$      $LMprob = 8.65626e-10$      $TMprob = 1.15054e-09$

## ITERATION 3

*Increase fertility. Change is -> est to is -> est*

*ce ne est pas juste.*  
*that is not fair.*

$Aprob = 2.65104e-16$      $LMprob = 5.05036e-06$      $TMprob = 5.24921e-11$

## ITERATION 4

*Change that -> ce to it -> ce*

*ce ne est pas juste.*  
*it is not fair.*

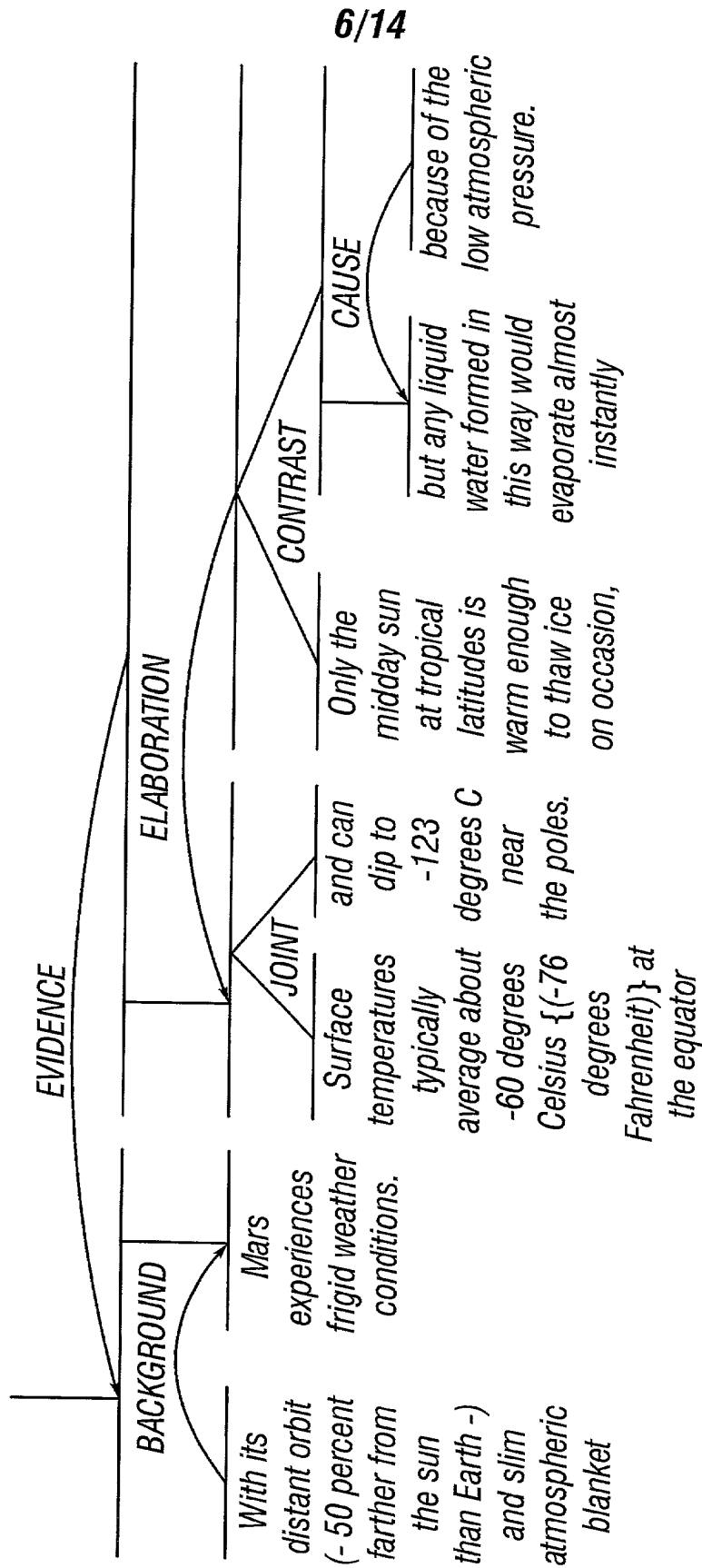
$Aprob = 3.82599e-16$      $LMprob = 6.63863e-06$      $TMprob = 5.76322e-11$

FIG. 4

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<i>sent length</i>	<i>decoder type</i>	<i>time (sec/sent)</i>	<i>translation errors (semantic and/or syntactic)</i>
6	<i>stack</i>	13.72	42
6	<i>greedy</i>	1.58	46
6	<i>greedy*</i>	0.07	46
8	<i>stack</i>	45.45	59
8	<i>greedy</i>	2.75	68
8	<i>greedy*</i>	0.15	69
10	<i>stack</i>	105.15	57
10	<i>greedy</i>	3.83	63
10	<i>greedy*</i>	0.20	68
15	<i>stack</i>	>2000	74
15	<i>greedy</i>	12.06	75
15	<i>greedy*</i>	1.11	75
15	<i>greedy<sup>1</sup></i>	0.63	76
20	<i>greedy</i>	49.23	86
20	<i>greedy*</i>	11.34	93
20	<i>greedy<sup>1</sup></i>	0.94	93

FIG. 5



**FIG. 6**

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[厚生省が昨年公表した<sup>1</sup>]  
[人口の将来推計では、<sup>2</sup>]  
[将来、一・四九九人を最低に、<sup>3</sup>]  
[その後は上昇に転ずると<sup>4</sup>]  
[推計していたが、<sup>5</sup>]  
[早くも予想がはずれる<sup>6</sup>]  
[見通しとなった。<sup>7</sup>]

FIG. 7

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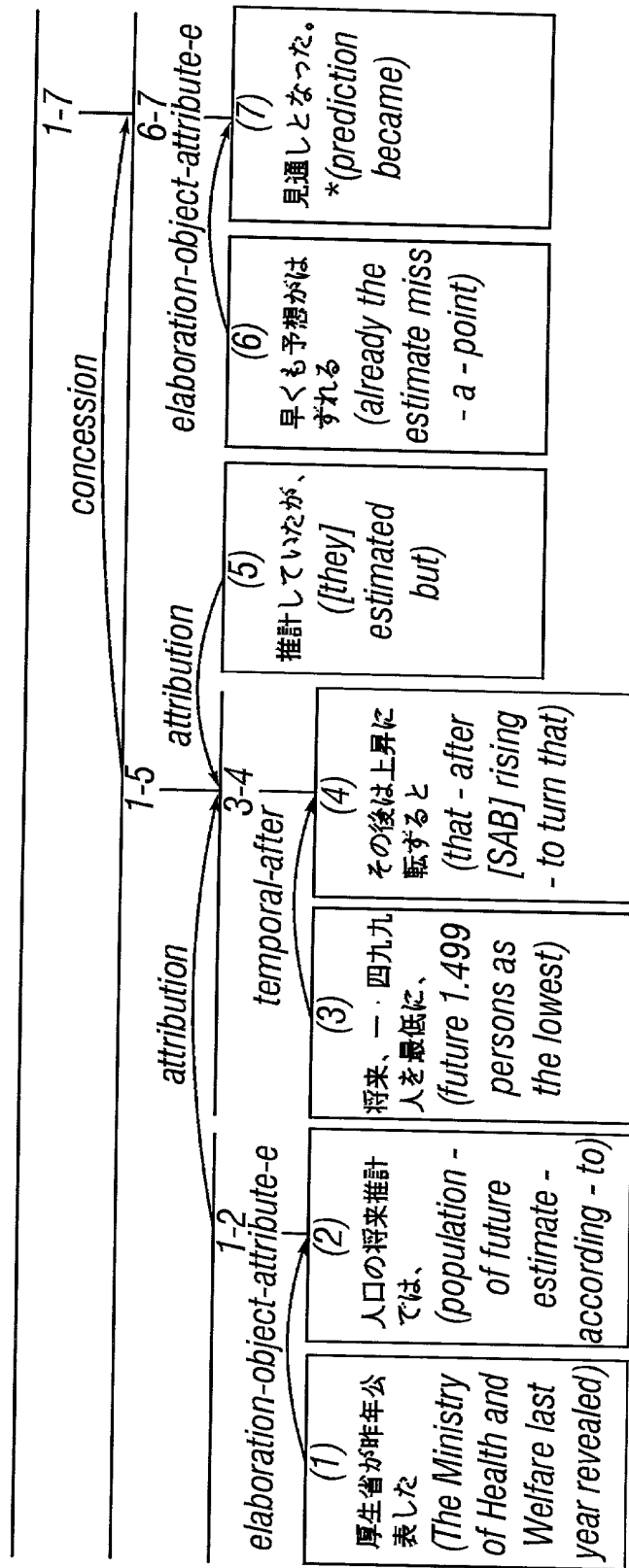


FIG. 8



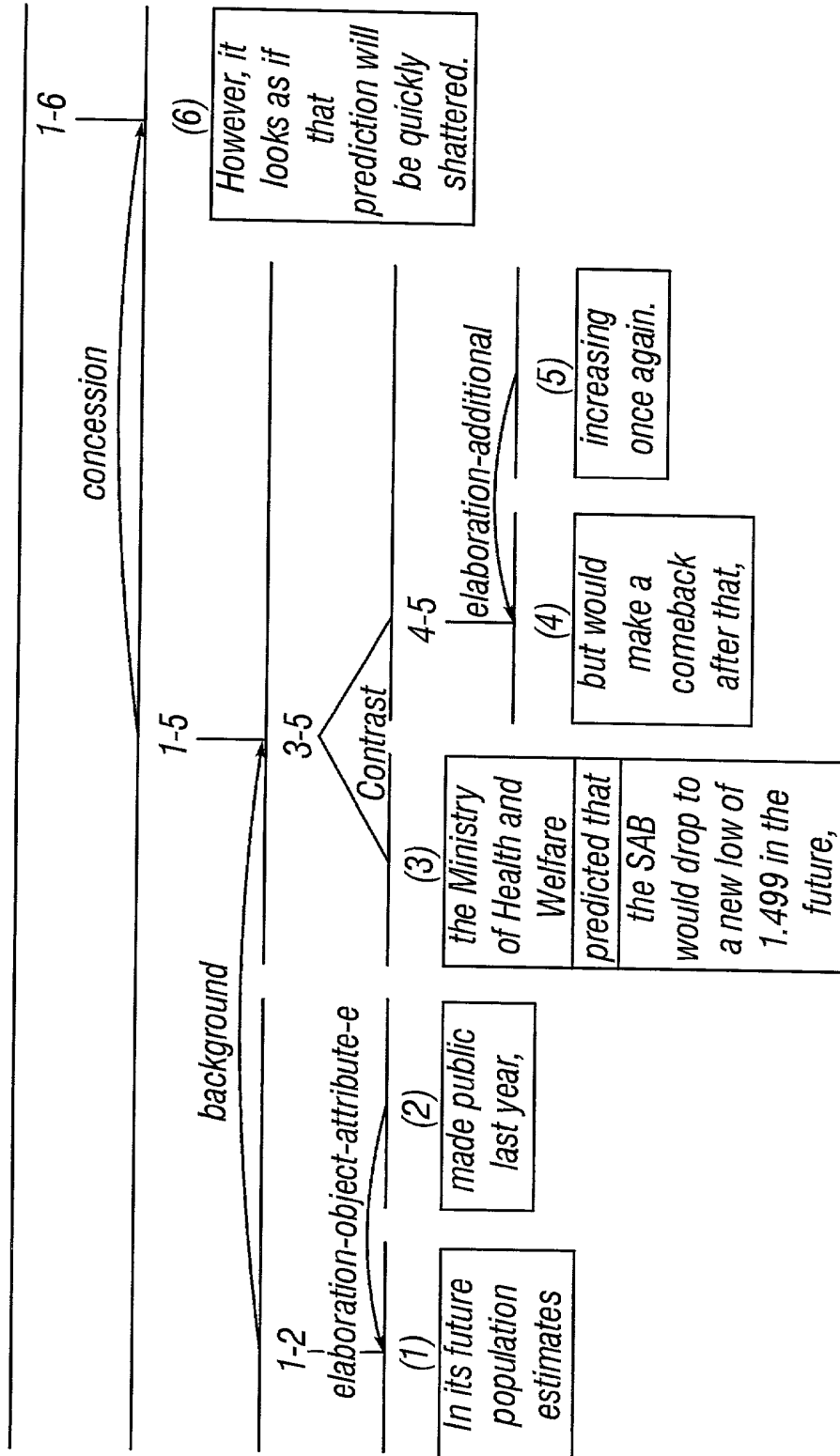


FIG. 9

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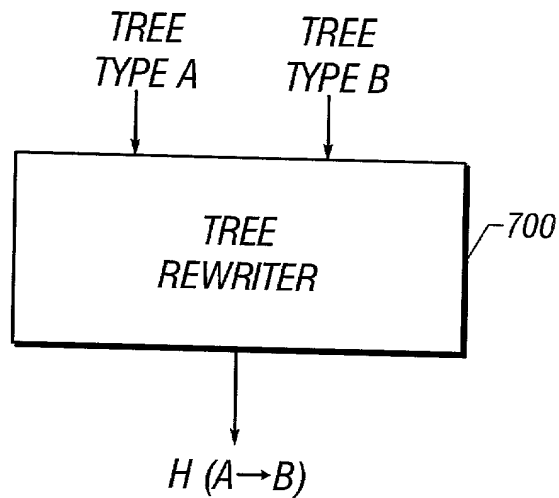


FIG. 10

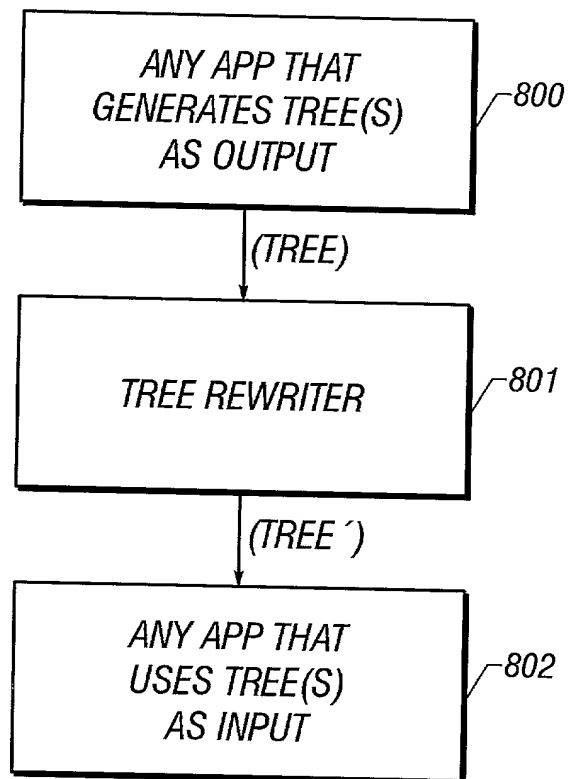


FIG. 11

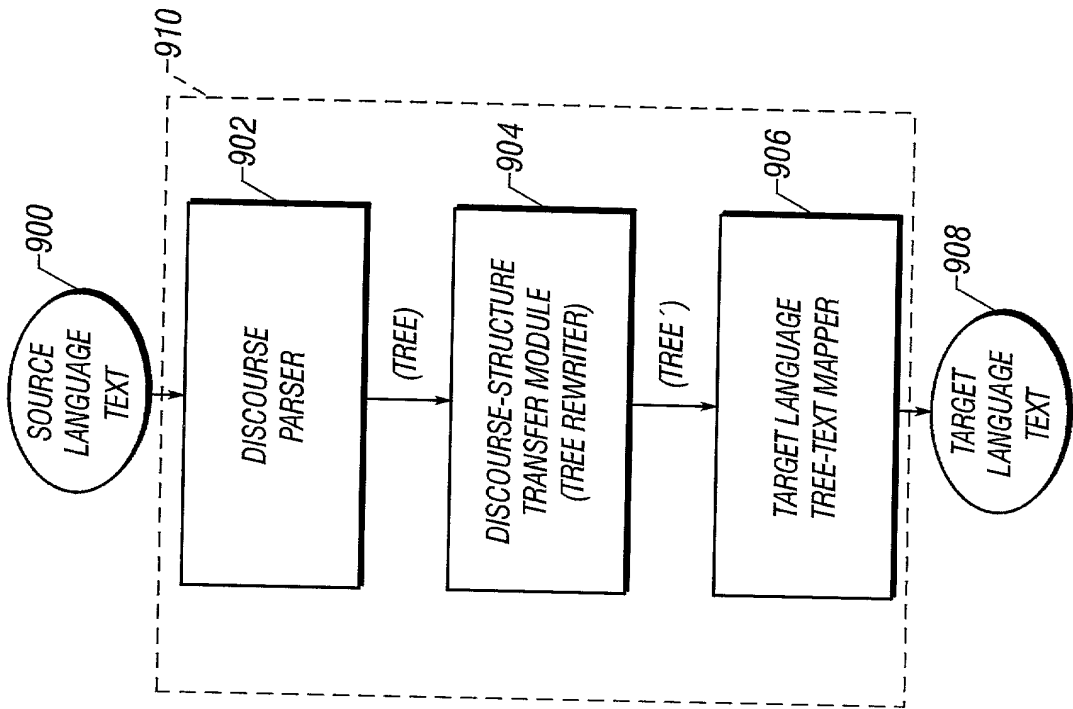


FIG. 12

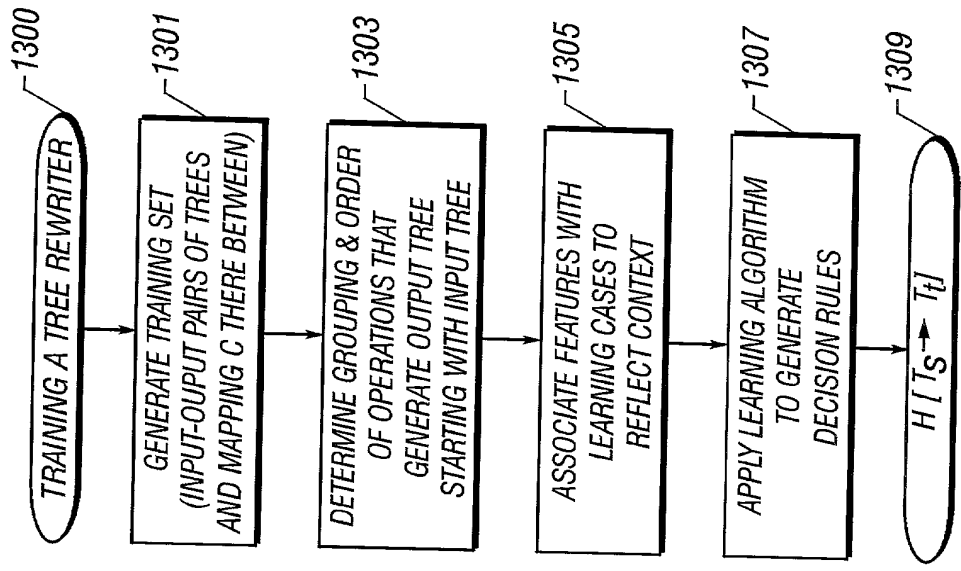


FIG. 13

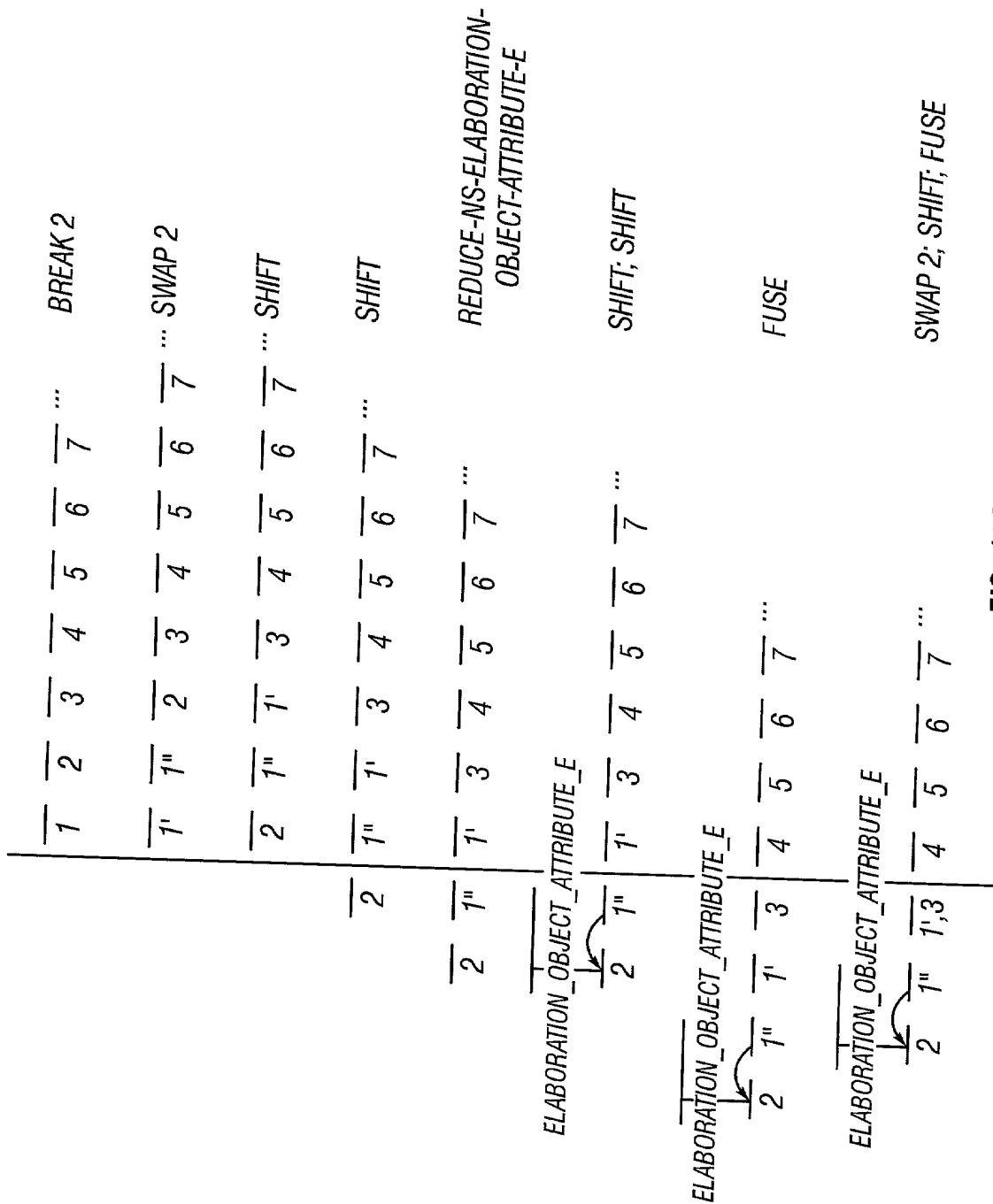
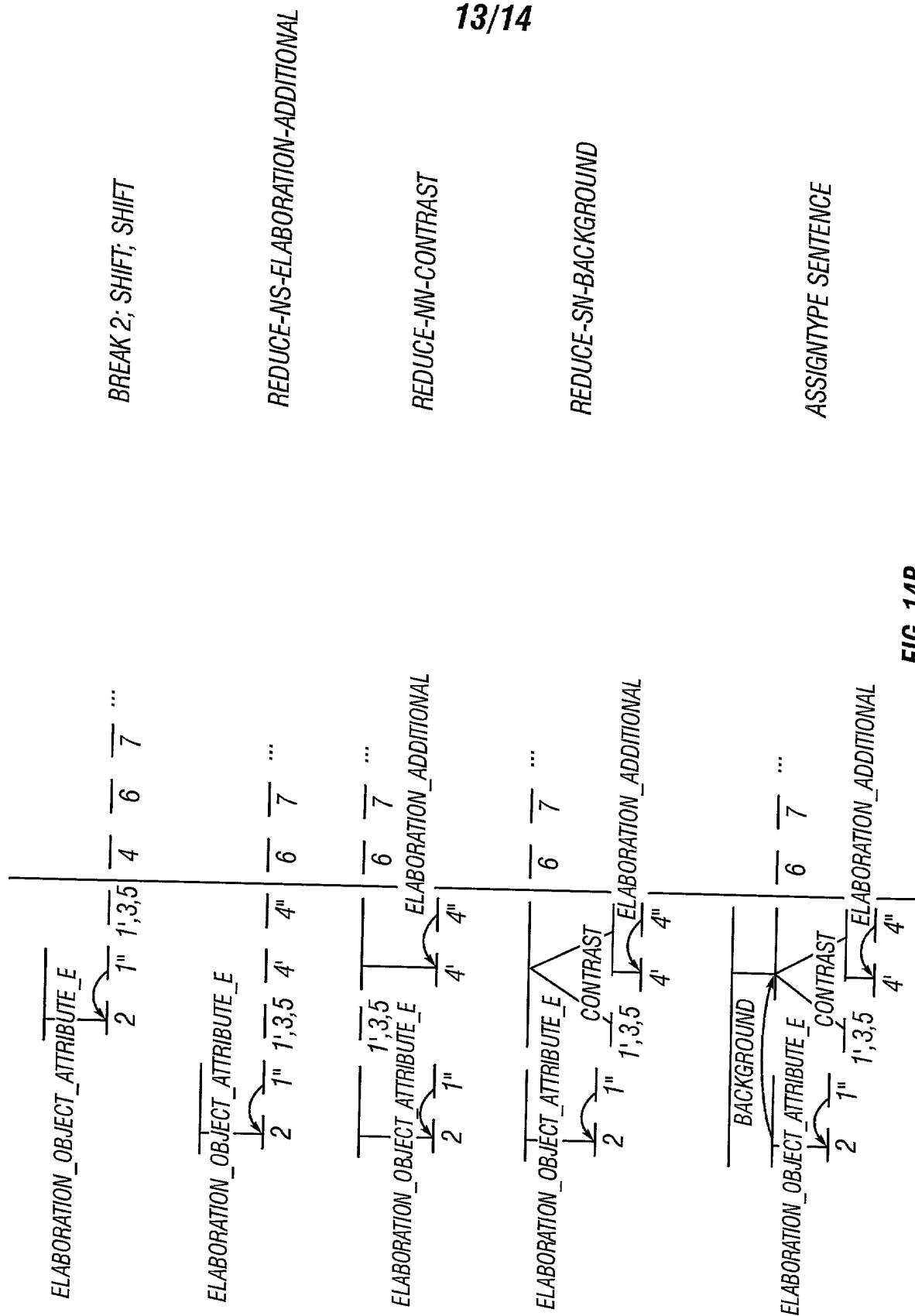


FIG. 14A



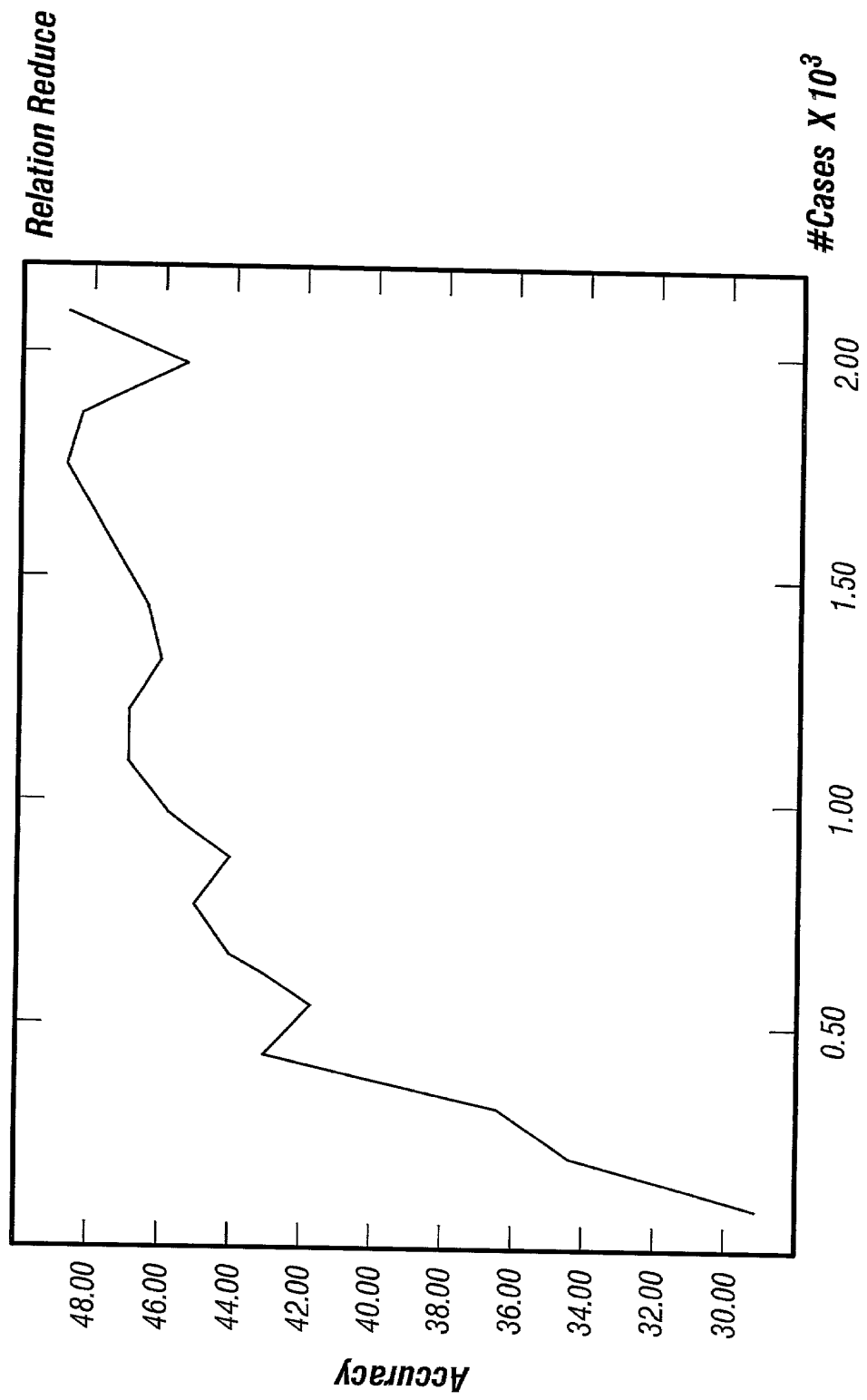


FIG. 15